TWR - 841

TEST PLANNING MANUAL

Naval Undersea Warfare Center Division, Newport
Engineering, Test, & Evaluation Department
Narragansett Bay Shallow Water Test Facility
Newport Range Office
Stillwater Basin

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WEB PAGES – NBSWTF

INTRANET
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www.npt.nuwc.navy.mil\ranges\index.html

GENERAL DESCRIPTION

The Torpedo Weapons Retriever TWR-841 is a NAVSEA vessel in the custody of the Naval Undersea Warfare Center Division, Newport, (NUWCDIVNPT). The vessel is operated by the Rangecraft Maintenance & Operations Contractor, (MOC), under management of the Narragansett Bay Shallow Water Test Facility (NBSWTF) Enterprise Team, Code 7010. The current MOC, under a contract awarded in 2001 and running through 2006, is Seaward Services, Inc. of Dania Beach, FL.

The TWR - 841 was constructed in 1986 by Marinette Marine of Marinette, Wisconsin. The vessel's as built mission was for recovery of up to 14 heavyweight torpedoes in coastal areas in moderate seas. It is well suited for Unmanned Underwater Vehicle support and recovery in the NBSWTF coastal range areas, in addition to testing and development support for weapons components ranging from day trips to extended cruises of 7 to 14 days.

The TWR - 841 is equipped with modern navigational equipment to support Torpedo Recovery and Test Support operations. The vessel typically supports deployment and recovery of small and large devices, buoys, and moorings, ROV operations, diving support, and towed array testing.

SCHEDULING

NUWCDIVNPT project leaders requiring ship time of the TWR - 841 must complete a Range Request Form to reserve the vessel. The request forms are submitted to the Code 72 NBSWTF Test Conductor/Piermaster. For scheduling purposes, it is requested that the Range Request Forms be submitted as early as possible prior to the test date. Cruises will be scheduled according to test requirements, compatibility in terms of inclusive dates, area of operation, and equipment requirements. Request forms are typically honored on a first - come, first - serve basis, with the exception of tests which are coordinating with Atlantic Fleet Vessels on strict schedules.

Cruises delayed by weather will be extended to complete scheduled tasks as long as this does not conflict with the ship's other scheduled testing. Efforts will be made to postpone another scheduled cruise, but this cannot be guaranteed.

FINANCING

Program Managers (PM) or Principal Investigators (PI) should include ship costs in the budget of their particular Test and Development or Advanced Technical Demonstration (ATD) Projects. Underway (U/W) days include the day of departure, all days while away from Newport, and the day of arrival. Non-operating days that are charged at a reduced rate include any day loading, setting up, and unloading gear that requires the crew and ship's power or cranes. Charges for these mobilization and demobilization days can depend on the extent of the ship's services required, but are usually half of the U/W rate. Rates are available from the NBSWTF Range Operations Office.

TEST PLAN

A documented Test Plan is required for lengthy or complex test operations. Based on the recovery, test, or demonstration work to be performed, the Test Plan sets forth the PI's requirements for the ship, its personnel and equipment. The Test Plan also designates the Test Director for the cruise or the senior member for the test group. The Test Plan should be prepared by the PI at least 30 days in advance of the cruise departure date. Some cruises require significantly more advanced planning and may necessitate a conference with the Range & Marine OPS personnel as well as visits to the vessel. When final approval is made by the Range & Marine Operation's Managers and the vessel Captain, the Test Plan becomes the order to the vessel's Captain to proceed on the specified dates and times to the specified geographic locations to accomplish the work requested. Reasonable changes in the Test Plan may be made after sailing and with the concurrence of the vessel Captain.

TEST DIRECTOR

As stated, the Test Plan designates the test team's Test Director for the cruise (this could be the PI, the Senior Engineer, or the Range Office Test Director. In the event of a cruise hosting multiple teams involving different tasks and objectives, one person will be designated as the Team Leader prior to sailing. This person will work with the Test Directors or Head Engineers of other groups and the Vessel Captain to assure a safe, fruitful cruise for all. The Team Leader has the authority to determine the make up of the engineering teams and the responsibility to assure compliance with the Vessel Operating Policies.

TEST TEAM

Persons making up the test team(s) will work with the respective Team Leader and/or Test Director to achieve a successful cruise. Prior to sailing, all persons making up the test team will attend the Captain's pre-sail Safety Briefing.

INSURANCE

Medical and accident or worker's compensation insurance is not provided by NBSWTF for persons on board who are not employed by the DOD. Personnel joining the test team must have a legitimate reason for participating in the cruise by association with the test program as a project member, engineering assistant, technician or student. All non DOD personnel are considered ship board as Guest Team Members. When necessary, personnel forms that provide information on specific health problems should be filled out and returned to the Captain. These forms should accompany the Test Plan

submitted to the Range Office prior to departure.

Non DOD vessels, participating in an operation and requiring use (loading, embarking or disembarking passengers) of any DOD facility / Pier, are required to provide the NUWC Chief Staff Officer with proof of their vessel's insurance status, in addition to a signed Indemnity Agreement.

DIVING

Diving operations off of NUWC vessels by divers not employed or contracted by the DOD, will not be allowed until the NUWC Diving Safety Officer certifies their participation.

HAZARDOUS MATERIALS

The Principal Investigator must notify Marine Operations via the Test Plan of the potential use of gasoline, explosives, or special chemical and radioactive materials. Because operations using hazardous materials may require Explosives Safety or Environmental Review, and may require special consideration or written and approved Standard Operating Procedures (SOP), the Test Plan should be submitted well in advance of 30 days prior to the test date. All materials that will be aboard for the cruise will be listed and forwarded to the NUWC Code 55 Environmental Health and Safety Department. They will determine what is hazardous and using applicable state and federal laws will advise NBSWTF Range Operations of guidelines governing the handling and reporting of these materials. Any licenses or permits required for particular hazardous or explosive materials (HAZMAT), such as OTTO Fuel, must be issued to the NBSWTF Range Operations Office and forwarded to the NUWC Explosives Safety Officer. The Test Director/Team Leader is responsible for HAZMAT and will be knowledgeable in the proper handling, storage and clean up practices, which must be documented in an approved SOP. The SOP will be studied, briefed, and signed by all team members. For more information, see the NUWC Hazardous Materials Spill Plan. Products that pose a threat to the environment must be handled with utmost care. A product spilled on deck must be contained and cleaned up. Cleaning and other materials become hazardous waste and must be disposed of properly in accordance with procedures established by the NUWC Environmental Division. A hazardous material that enters the environment must be reported to the bridge immediately so the crew can attempt recovery and clean up procedures. Never dispose of any chemicals, acids or hazardous materials down ship's drains.

WASTE DISPOSAL

A statement of the arrangement to be followed for collecting, storing and disposing of all waste generated in a test must be provided. NUWC is not authorized disposal of any waste at sea nor in port of another institution's products. Therefore, all

waste must be returned to shore for disposal by the owner's activity. Clean up of materials discharged aboard the vessel will be the responsibility of the Principal Investigator.

ENVIRONMENTAL SIGNIFICANT ASPECTS

Undersea Acoustic Transducers: Whenever any active transducers are used, the Chief Engineer or Principal Investigator is responsible for notifying the NBSWTF via the Test Plan at four weeks or more prior to the operation of the 1) nature of operations, 2) date and time, 3) location, 4) type of device, acoustic emitter, drag device, charge size, etc. Procedures set forth in specific SOP(s) related to the device or previously set forth in the NARRABAY Continuing Action shall be followed in conducting these operations. An Environmental Consideration will be released by the Range Office, via the Environmental Department, only after an Environmental Review, if necessary, has been performed.

EXPLOSIVES

The use and handling of explosives, torpedoes (OTTO fuel) is restricted to those persons possessing current certification by the NUWC Explosive Ordnance Certification Board. The TWR – 841 crew, and Range Department personnel maintain current qualifications in the Explosives Certification Program. An itinerary for loading and off-loading explosives must be provided via the Test Plan. Because some ports prohibit the loading or off-loading of explosives, alteration of the cruise schedule may be necessary. Loading explosives at Navy piers is supervised by the Pier Loading Officer. Prior information which may be required by the Officer includes:

1) Explosives facilities required for loading/off-loading
2) Date of loading
3) SOP
4) Handler's Licenses/Certifications
5) Unit quantity of each type explosive and hazardous material
6) Unit packaging, dimensions and weight
7) Unit identification as listed in NALC
8) Ship loading plan
9) Container markings

LOADING AND OFF-LOADING

At the Stillwater Basin piers, or in other domestic ports, the TWR - 841 can load or off-load packages up to 4,000 lbs. At the 4,000 capacity, the crane can reach approximately 20 feet beyond the starboard side of the vessel, and just off the port side. Heavier loads may require auxiliary shore crane service. The TWR - 841 will normally be loaded the day prior to departure and off-loaded on the day of return. If it is necessary

to set up equipment prior to this, consult with the Marine Operations Office in advance to determine that such operations will not interfere with ship's normal maintenance and logistics or with other scheduled testing. Extra loading and off-loading days must be scheduled in the Test Plan. Notification, scheduling, and additional cost of other cranes are the responsibility of the Principal Investigator.

ARRIVAL AND DEPARTURE OF TEST TEAM PERSONNEL

Home Port: Normally the test team will board the vessel on the day of departure from port and depart the vessel soon after arrival in port. For 24 hour operations, a test team of 10 personnel can be accommodated for berthing. Modifications to these policies should be made in advance with the Marine Operations Office.

MEALS, LINEN AND CLEANING

With the exception of overnight cruises, the crew aboard the TWR - 841 does not provide for cooking or cleaning services. Where applicable, these duties must be shared by the crew and test team. Areas to be jointly cleaned include the work decks and portable van. Unless other arrangements are made between the PI or Test Director and Marine Operations, the following meal policy will prevail:

Day cruises out of home port 12 hours or less in duration - hot and cold beverages will be provided.

Day cruises out of home port greater than 12 hours long - lunch, snack foods, and hot and cold beverages will be provided.

Day cruises out of home port or a satellite home port exceeding 12 hours will offer the above plus other items as available such as canned soups, stews or frozen dinners, sandwiches, etc.

Cruises of greater than 24 hour operations complete 3 meal menus.

Attempts will be made to meet special dietary requirements provided sufficient advance notice is given.

Bed linen is provided with supply of pillows and blankets. It is each rider's responsibility to provide their own soap and towels. Beds must be stripped and linen placed in the laundry room at the end of the cruise.

USE OF FRESH WATER

Conserving water is important. The limited supply dictates it is used most sparingly.

FOUL WEATHER GEAR

A limited amount of gear may be available on board, but normally this is the responsibility of the test team members.

COMMUNICATIONS, SHIP'S INTERCOM

Communications are integrally available from the galley and pilot house; a bridge communications radio can be supplied to the portable van.

SATELLITE TELEPHONE

Calls via the MARINESAT telephone system can be made/received on the bridge with the Captain's authority. Calls are to be logged and are chargeable to the project at $2.00 per minute. Incoming number is toll free to the originator, the number is (888) 626-6527.

CELLULAR PHONE

The cellular phone is not to be used for outgoing or incoming calls other than on a test requirement or emergency basis. Should considerable cell phone use by Test team be anticipated, they should plan to provide their own. Cell phone number: 401-842-7725.

Brief messages can be relayed through the NBSWTF Marine Operations Office Base Radio Station, Monday through Friday 0800-1600 hours. For shore based personnel needing to convey information to the ship, call NBSWTF office (401-832-3763) or the Marine Operations Office (401-832-4594). Prearranged HF communications are usually set up. VHF and HF call sign of the TWR - 841 is "Naval Vessel TWR – 841".

SHIP EMERGENCY PROCEDURES

Emergency procedures and watch station bills are posted on the galley bulletin board and in the pilot house. Take note of stations to which the Test Team is to report in the event of Fire, Abandon Ship or Man Overboard emergencies. Also posted are the whistle and bell signals for the various emergencies. Everyone must attend the pre-cruise safety briefing by the Captain. Dependent on time of year, type of work planned, etc. the Captain will convey in detail all safety regulations that must be complied with.

MAN OVERBOARD

Call out a man overboard as loudly as possible, indicating the side of the ship from which the victim fell. Throw a life ring immediately. Life rings are located port and starboard on both decks. Note their location and arrangement of the lanyard and light. Keep an eye on the victim to direct the vessel for the recovery.

SHIP SAFETY

For personal safety, do not lean on, sit on, or hang over life rails and life lines. The following regulations and procedures are set forth as a guide to ensure the safety of the ship and its occupants. Common sense and respect for fellow shipmates will contribute to a pleasant cruise with the fewest possible problems.

1) While underway, keep all water tight doors and hatches closed and dogged as directed by the Captain's Safety Briefing.
2) Engine spaces are off limits to all but ship's crew, unless invited.
3) Members of the Test Team will not be allowed to operate deck machinery.
4) Report any abnormalities to the Captain.

RESPONSIBILITY

The Captain is responsible for the safety of the ship, its crew, and the Test team. The Test Director also represents and exercises the Captain's authority. The Test Director is responsible for the safety of the test operations and is subject to the Captain's authority on decisions regarding safety.

SAFETY EQUIPMENT PROVIDED

- Immersion suits
- SOLAS Type I Personal Flotation Devices (PFD)
- Work vests
- Hard hats

WORK VESTS AND HARD HATS

When working on deck, work vests or life vests or other comparable Type 1 or 3 life saving devices will be worn. Hard hats will be worn by personnel on deck when there are any overhead operations ongoing.

FOOT PROTECTION

All personnel are required to wear ANSI certified steel toed shoes when directly involved in any on-deck lift operations.

PLACING GEAR OVERBOARD

Before putting gear over the side, obtain permission from the bridge. To avoid confusion, one designated person (usually the Test Director or the First Mate / Deck Master) will direct and coordinate with the Captain or the bridge for all deck operations.

LOOSE EQUIPMENT

Prevent injury to personnel or damage to the ship by stowing and lashing all unused gear. Operating controls, emergency exits, passageways, winches and fire fighting equipment must not be blocked or obstructed with gear. Doors should be closed firmly or hooked in the open position. Never allow a door or hatch to swing free.

WORKING ALOFT

Unless it is very important, no one is allowed on the pilot house roof or up the masts while the vessel is underway. The ship provides safety belts. Prior to going aloft, permission must be granted by the Captain or Mate on watch.

ACCIDENTS OR ILLNESS

All accidents and illnesses must be reported to the Captain. Accident Report Forms are required to be filled out. First aid items are available. Common medications are not regularly kept aboard. You must provide your own pain medications, motion sickness medication, and sun blocks.

SPECIAL HEALTH NEEDS

The Test Director is required to inform the Marine Operations Office of any member of the Test team with special health problems, health needs, allergies, special dietary requirements and any prescription medication that will be aboard. (See Medical or Special Needs Form). A member of the Test team with a disability must be brought to the attention of Marine Operations Office with the Test Plan. All attempts will be made to provide reasonable accommodations for this person.

FIRES

Although there are fire and smoke sensing alarm systems aboard, be alert and report any conditions or concerns to the bridge. Fires aboard ship are very serious and much more difficult to control than fires on shore. Every effort should be made to avoid conditions that might cause a fire. Fire fighting equipment should not be obstructed by gear or clothing. Do not use light fixtures for clothes hangers or rig temporary shades of

flammable material over lights. The pilot house should be informed prior to transferring volatile liquids. In the event of an emergency, stay clear of the scene of a fire, but be prepared to assist if requested by a crew member. Learn the location of all fire-fighting equipment before the ship leaves port.

GENERAL REGULATIONS

Tools and equipment: Although ship's tools and stores are available to test personnel while at sea, please try to anticipate your needs and bring your own tools and supplies. These items may be obtained by contacting the First Mate. Return them immediately after use; please wash salt water off all tools. Consult ship's crew if you wish to use a piece of equipment with which you are unfamiliar. All deck machinery will be operated by the ship's crew only.

Damage to Ship and Facilities: Protect the ship from damage when handling gear and hazardous materials.

Try not to scar decks, paint, and woodwork. Please avoid using tape as a hold down material.

Do not deposit paper towels, sanitary pads, or similar materials in a marine toilet. Use a waste basket or other receptacle provided for that purpose.

Do not use bedding or life jackets on deck for sunbathing or other uses.

Water Tight Hatches: All water tight hatches must be closed and dogged while underway.

Only the Captain may designate hatches that may be secured in an open position.

Bridge and Engine Room: The bridge and engine room can be visited with permission of the Captain or Engineer.

Assistance to Crew: Requests for assistance from Test Team Personnel will be made through the Test Director.

PERSONAL REGULATIONS

Prohibited Items: The possession or use of alcohol is not permitted. Narcotics, marijuana or similar substances are prohibited. Firearms and sheath knives are not permitted on board.

Orderliness and Cleanliness: Keep clothing and personal gear stowed. Keep berthing area clear of shoes and rain gear. Do not leave paper towels and like debris, tie raps, electric tape, scientific equipment, and tools scattered around the ship. Pick up, even if it is not yours.

Consideration for Others: Avoid excessive noise, because your shipmates may be resting, sleeping or working.

ENGINEERS

Members of the Test Team, observers, principal investigators, funding agency

personnel, engineers, or students aboard are not considered crew. They are not allowed to participate in operations directly involved in operating the vessel.

HARASSMENT

In the event a crew member or member of the test team feels harassed, it must be reported to the Captain and/or the Test Conductor and acted upon immediately. There will not be any blocks in the chain of command aboard to prevent anyone from coming forward to report an alleged incident.

The Test Team Engineers, Test Director, Test Conductor, Engineer and Captain will all be aware of this policy and be open to hear any complaints. No one aboard will be immune to reproach. Either the Captain or Test Conductor will document the incident obtaining and recording all the information. The Test Conductor or Captain will confront the individual accused and inform this person of the situation, and document this person's reply, then inform this individual that this behavior will not be tolerated aboard. Whether the incident is real or a misunderstanding, a written report and the documentation must be submitted to the Range Operations Manager. The Range Operations Manager will review the report, speak to those involved and decide if appropriate action had been taken. If all parties are satisfied, and based on Navy policy decide what further, if any, action must be taken. If any parties are not satisfied, the NUWC Human Resources Department will be contacted to assist in resolving the issues.

GARBAGE

All persons are advised that dumping garbage of any type is not allowed. From food products to plastics, nothing is to be discarded over the side.

RECYCLING

All empty deposit-type items will be stowed in a marked receptacle in the galley. All #2 plastic, glass bottles and cans washed out will be stowed in a marked receptacle for these items in the galley. All other items (garbage) will be disposed of in trash containers in the head, van, pilot house and galley.

POST CRUISE CLEANING

To provide clean living quarters for the next test team, it is necessary that each occupant clean his or her berthing area before departing the ship.

CONFIGURATION AND EQUIPMENT

DESCRIPTION: Steel hull, single screw, diesel powered research vessel, outfitted for year round coastal and near continental shelf service.

- Builder: Marinette Marine, Marinette, Wisconsin
- Launch Date: 1986
- Home port: Newport , RI
- Inspection: NAVAL Material Inspection
- Accommodations: 18 berths
- Crew: 4 to 8, depending on mission
- Endurance: range of up to 7 to 14 days

PRINCIPAL CHARACTERISTICS:

- Length: 120 feet
- Length, waterline: 111 feet
- Beam, molded: 25 feet
- Depth, molded: 7’ 5”
- Draft, amidships to Transducer: 12'-0"
- Fuel oil capacity (approx.) 8,000 gallons
- Maximum speed (calculated) 12 knots
- Fuel consumption Approx. 50 GPH @ 10 Knots
- Maximum height (approx.): 62 feet
- Minimum speed: 4 knots
- Gross regulatory tonnage 248 tons
- Fresh Water Capacity 5,200 gallons

MACHINERY:

- Main engines: Twin Caterpillar D3512, 2350 BHP @ 1600 rpm
- Transmission: Caterpillar, 10 to 1 RA, MDL# 7241

EQUIPMENT:

- Stern A-frame: (16' high X 7' wide X 9’ over the stern) Contractor fabricated; 5,000 lb. Capacity when coordinated with:
- SEAMAC 5,000 lb. Oceanographic Winch. Diesel hydraulic. Drum capacity: 5,000' of 1/2" wire: Full drum line pull capacity: 5,000 lbs.
- Deck Crane: Appleton 2 ton Knuckle-boom Crane with self contained 25 HP electro-hydraulic power pack and controls. 24 feet reach with 4,000 lb. lift capacity at all angles.
- Torpedo Recovery winch and transfer Carriage: 3000 lb. mounted in line with recovery ramp
- Capstan: Electric motor/brake, Ideal Windlass Co., MDL# AB-5, 3800 lb. pull @ 30 fpm, located on main deck starboard stern.

COMMUNICATIONS:

- 2 VHF Marine, VHF NUWCNET
- UHF Transceiver Set, RT – 980A/GRC-171(V)
- HF SSB, ICOM IC-M810
- WQC-2/C-7440A Underwater Telephone, hull mounted transducer
- MARINESAT (KVH Tracphone) satellite voice and data transmission @4800 bps (out to 150 nm offshore)
- Analog cellular phone (10 to 20 nm off shore

ELECTRICAL POWER:

- Two Diesel generator sets, Caterpillar D3304, each rated 64 KW, 440 VAC, three phase.
- Deck Connections:
  - One 60 amp, 440 VAC, three phase receptacle
  - One 40 Amp, 208/120 VAC receptacle and a 208 VAC receptacle
  - Two 30 amp, 120 VAC, single phase receptacles used to feed the portable project van.

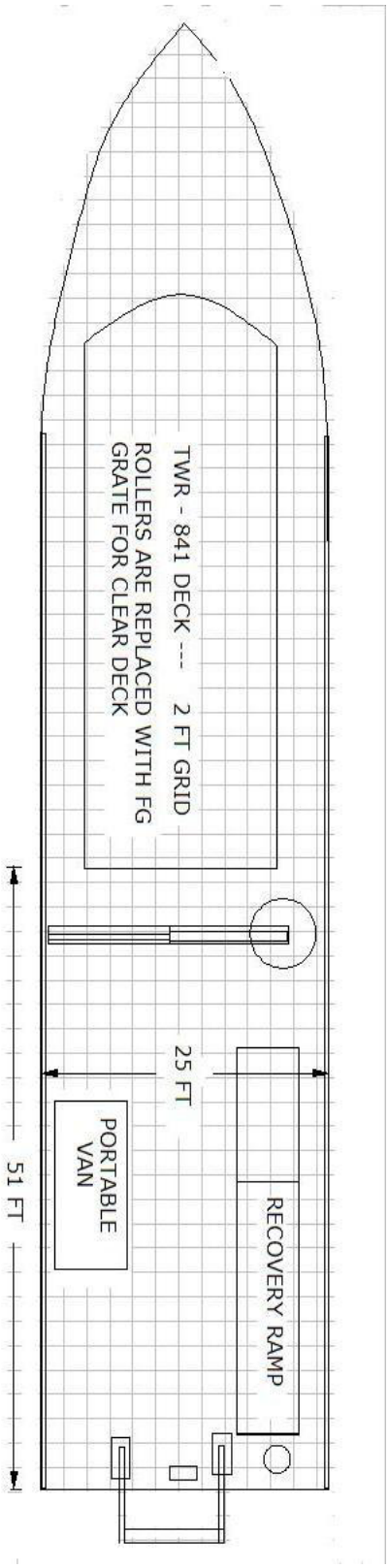
ELECTRONICS:

- Furuno FR2011 Long Range Tracking Radar
- Furono RDF-111 Short Range Radar
- Furuno FCV – 522 color video depth sounder (50/200k)
- 2 Northstar LORAN
- Leica MX 400 DGPS
- Magnavox MX4200 DGPS
- Magnavox MX-50R DGPS
- GYRO, MK 27 MOD 1, with NEMA 0183 output
- PC - Visual Navigation Suite

TEST CAPABILITY:

- Test mission maximum payload is approximately 17 tons. Portable project van available (7 x 7 x 15).
- Interior of vessel is heated and air conditioned
- Work deck area approx. 1250 sq. ft.
- Service boats: Hurricane RHIB – 85 with 40 HP-OB; Zodiac 8ft., 6 HP-OB, for torpedo recovery.

DECK LAYOUT:


TWR - 841 DECK --- 2 FT GRID
ROLLERS ARE REPLACED WITH FG
GRATE FOR CLEAR DECK
25 FT
51 FT
PORTABLE VAN
RECOVERY RAMP